nal Application No PL1/UK 02/00419

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C12N15/10 C12P1/00

C12P19/34

C12P21/02

C07H21/00

Relevant to claim No.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Category °

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, CAB Data, SEQUENCE SEARCH, BIOSIS, EPO-Internal

Citation of document, with indication, where appropriate, of the relevant passages

E	WO 02 074929 A (KANAN MATTEW J; LIU DAVID R (US); HARVARD 26 September 2002 (2002-09-26 claims 1-46; figures 3,22-25	COLLEGE ()	1-232
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<u> </u>	her documents are listed in the continuation of box C. stegories of cited documents:	Patent family members are listed	ernational filing date
° Special ca	ategories of cited documents : ent defining the general state of the art which is not dered to be of particular relevance	"T" later document published after the inte or priority date and not in conflict with cited to understand the principle or th invention	ernational filing date the application but eory underlying the
Special ca "A" docume consider filing consider which citation country of the country of th	ent defining the general state of the art which is not dered to be of particular relevance document but published on or after the international date ent which may throw doubts on priority claim(s) or is cited to establish the publication date of another n or other special reason (as specified) ent referring to an oral disclosure, use, exhibition or means ent published prior to the international filing date but	"T" later document published after the inte or priority date and not in conflict with cited to understand the principle or th	ernational filing date the application but eory underlying the claimed invention t be considered to cument is taken alone claimed invention ventive step when the ore other such docu- us to a person skilled
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° Special ca "A" docume consic "E" earlier of filing of "L" docume which citatio "O" docume other "P" docume later ti	ent defining the general state of the art which is not dered to be of particular relevance document but published on or after the international date ent which may throw doubts on priority claim(s) or is cited to establish the publication date of another n or other special reason (as specified) ent referring to an oral disclosure, use, exhibition or means ent published prior to the international filing date but	"T" later document published after the inte or priority date and not in conflict with cited to understand the principle or the invention "X" document of particular relevance; the cannot be considered novel or cannot involve an inventive step when the document of particular relevance; the cannot be considered to involve an indocument is combined with one or mand the combined with one or mand the art. "8" document member of the same patent	ernational filing date the application but eory underlying the claimed invention t be considered to ocument is taken alone claimed invention ventive step when the ore other such docu- us to a person skilled

Inte nal Application No
PCT/DK 02/00419

C.(Continu	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	
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4	WO 98 56904 A (RIGEL PHARMACEUTICALS INC) 17 December 1998 (1998-12-17) the whole document	
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national application No. PCT/DK 02/00419

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)
This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)
This International Searching Authority found multiple inventions in this international application, as follows:
see additional sheet
As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-232,236 (complete); 237-242,244-253,265-289,292,296-306 (partially)
Remark on Protest The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-232, 236, (237-242, 244-253, 265-289, 292, 296-306)-partially

A method for synthesising a template molecule comprising a plurality of functional groups, said method comprising the steps of i) providing at least one template comprising a sequence of n coding elements, wherein each coding element comprises at least one recognition group capable of recognising a predetermined complementing element, and wherein n is an integer of more than 1, ii) providing a plurality of building blocks, wherein each building block comprises a) at least one complementing element comprising at least one recognition group capable of recognising a predetermined coding element, b) at least one functional entity comprising at least one functional group and at least one reactive group, and c) at least one linker separating the at least one functional entity from the at least one complementing element, iii) contacting each of said coding elements with a complementing element capable of recognising said coding element, iv) optionally, obtaining a complementing template, and v) obtaining a template molecule comprising covalently linked, functional groups by linking, by means of a reaction involving reactive groups, a functional group of at least one functional entity to a functional group of another, functional entity, wherein the templated molecule is capable of being linked by means of a linker to the complementing template or template that template the synthesis of the template molecule, and wherein the synthesis of the templated molecule does not involve ribosome mediated translation of a nucleic acid;

2. Claims: 233, (237-242, 244-253, 265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule does not comprise or consist of an a-peptide or a nucleotide:

3. Claims: 234, (237-242, 244-253, 265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule does not comprise or consist of a monosubstituted a-peptide or a nucleotide;

4. Claims: 235, (237-242, 244-253, 265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule does not comprise or consist of a peptide or a nucleotide;

5. Claim: 243

A complex comprising a template molecule and the template that template the synthesis of the template molecule;

6. Claims: 254, (265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule is linked by means of a linker to the complementing template or template that template the synthesis of the template molecule, wherein the template molecule does not comprise or consist of an alpha-peptide;

7. Claims: 255, (265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule is linked by means of a linker to the complementing template or template that template the synthesis of the templated molecule, wherein the template molecule does not comprise a monosubstituted a-peptide;

8. Claims: 256, (265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the templated molecule is linked by means of a linker to the complementing template or template that template the synthesis of the template molecule, wherein the template molecule does not comprise or consist of an a-peptide or a nucleotide;

9. Claims: 257, (265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule is linked by means of a linker to the complementing template or template that template the synthesis of the template molecule, wherein the template is not a natural nucleotide, when the template molecule is an a-peptide;

10. Claims: 258, (265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule is linked by means of a linker to the complementing template or template that template the synthesis of the template molecule, wherein the template does not consist exclusively of natural nucleotides, when the template molecule is a peptide comprising exclusively monosubstituted a-amino acids;

11. Claims: 259, (265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule is linked by means of a linker to the complementing template or template that template the synthesis of the template molecule, wherein the template is not a natural nucleotide, when the template molecule is a natural a-peptide;

12. Claims: 260, (265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule is linked by means of a linker to the complementing template or template that template the synthesis of the template molecule, wherein the template is not a nucleotide, when the template molecule is a natural a-peptide;

13. Claims: 261, (265-289, 292, 296-306)-partially

A templated molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule is linked by means of a linker to the complementing template or template that template the synthesis of the template molecule, wherein the template is not a nucleotide, when the template molecule is a monosubstituted a-peptide;

14. Claims: 262, (265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule is linked by means of a linker to the complementing template or template that template the synthesis of the template molecule, wherein the template is not a nucleotide, when the template molecule is an a-peptide;

15. Claims: 263, (265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule is linked by means of a linker to the complementing template or template that template the synthesis of the template molecule, wherein the template is not a natural nucleotide, when the template molecule is a peptide;

16. Claims: 264, (265-289, 292, 296-306)-partially

A template molecule comprising a sequence of covalently linked, functional groups, wherein the template molecule is linked by means of a linker to the complementing template or template that template the synthesis of the template molecule, wherein the template is not a nucleotide, when the template molecule is a peptide;

17. Claims: 290, (292, 296-306)-partially

A molecule comprising a sequence of covalently linked building blocks, wherein the sequence of covalently linked building blocks comprises a sequence of complementing elements forming a complementing template capable of complementing the template that template the synthesis of the template molecule, and wherein the template molecule is linked to the complementing template or template that template its synthesis;

18. Claims: 291, (292)-partially

A templated molecule according to any of the previous claims, wherein the templated molecule comprises a sequence of functional entities comprising at least one functional group, and optionally at least one reactive group type 11, and wherein each functional entity is linked to a complementing element or a template that template the synthesis of the templated molecule;

19. Claim: 293

A method for screening template molecules potentially having a predetermined activity, said method comprising the step of providing a target molecule or a target entity, including a surface, and obtaining template molecules having an affinity for-or an effect on-said target molecule or target entity;

20. Claim: 294

A method for assaying an activity potentially associated with a template molecules, said method comprising the step of providing a target molecule or a target entity, including

a surface, and obtaining template molecules having an affinity for-or an effect on-said target molecule or target entity, and determining the activity of the templated molecule;

21. Claim: 295

A method for selecting complexes or template molecules having a predetermined activity, said method comprising the step of performing a selection procedure and selecting templated molecules based on predetermined selection criteria;

22. Claim: 307

A method for amplifying the complementing template or the template that template the synthesis of the templated molecule having, or potentially having a predetermined activity, said method comprising the step of contacting the template with amplification means, and amplifying the template;

23. Claim: 308

A method for amplifying the complementing template or the template that template the synthesis of the templated molecule having, or potentially having, a predetermined activity, said method comprising the steps of i) contacting the template with amplification means, and amplifying the template, and ii) obtaining the templated molecule in an at least two-fold increased amount;

24. Claim: 309

A method for altering the sequence of a templated molecule, including generating a template molecule comprising a novel or altered sequence of functional groups, wherein said method preferably comprises the steps of i) providing a first complementing template or a first template capable of templating the first templated molecule, or a plurality of such first com plementing templates or first templates capable of templating a plurality of first template molecules, ii) mutating or modifying the sequence of the first complementing template or the first template, or the plurality of first complementing templates or first templates, and generating a second template or a second comple menting template, or a plurality of second templates or second comple menting templates, wherein said second template (s) or complementing template (s) is capa ble of templating the synthesis of a second template molecule, or a

plurality of second template molecules, wherein said second template molecule (s) comprises a sequence of covalently linked, functional groups that is not identical to the sequence of functional groups of the first template molecule(s), and optionally iii) templating by means of said second template(s) or complementing tem plate (s) a second template molecule, or a plurality of such second tem plated molecules;

25. Claims: 310-313

A method for altering the sequence of a template molecule, including generating a template molecule comprising a novel or altered sequence of functional groups, wherein said method preferably comprises the steps of i) providing a plurality of first complementing templates or first templates capable of templating a plurality of first template molecules, ii) recombining the sequences of the plurality of first complementing tem plates or first templates, and generating a second template or a second complementing template, or a plurality of second templates or second complementing templates, wherein said second template(s) or complementing template(s) is capable of templating the synthesis of a second template molecule, or a plu rality of second templated molecules, wherein said second template molecule(s) comprises a sequence of covalently linked, functional groups that is not identical to the sequence of functional groups of the first template molecule(s), and optionally iii) templating by means of said second template (s) or complementing tem plate (s) a second template molecule, or a plurality of such second templated molecules;

26. Claims: 314-316

A building block comprising i) a complementing element capable of specifically recognising a coding element having a recognition group, said complementing element being selected from nucleotides, amino acids, antibodies, antigens, proteins, peptides, and molecules with nucleotide recognizing ability, ii) at least one functional entity selected from a precursor of a-peptides, p- peptides, y-peptides, w-peptides, mono-, di-and tri-substituted apeptides, p-peptides, y-peptides, o-peptides, peptides wherein the amino acid residues are in the L-form or in the D-form, vinylogous polypeptides, glycopoly-peptides, polyamides, vinylogous sulfonamide peptide, polysulfonamide, conjugated peptides comprising e. g. prosthetic groups, polyesters, polysaccharides, polycarbamates, polycarbonates, polyureas, polypeptidylphosphonates, polyurethanes, azatides, oligo N-substituted glycines, polyethers, ethoxyformacetal oligomers, poly-thioethers, polyethylene glycols (PEG), polyethylenes, polydisulfides, polyarylene

sulfides, polynucleotides, PNAs, LNAs, morpholinos, oligo pyrrolinone, polyoximes, polyimines, polyethyleneimines, polyimides, polyacetals, polyacetates, polystyrenes, polyvinyl, lipids, phospholipids, glycolipids, polycyclic compounds comprising e. g. aliphatic or aromatic cycles, including polyheterocyclic compounds, proteoglycans, and polysiloxanes, and iii) a linker separating the functional entity from the complementing element;

INTERNATIONAL SEARCH REPORT mation on patent family members

Inte nal Application No
PUI/UK 02/00419

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(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 27 December 2002 (27.12.2002)

PCT

(10) International Publication Number WO 02/103008 A3

- C12N 15/10, (51) International Patent Classification7: C12P 1/00, 19/34, C07H 21/00, C12P 21/02
- (21) International Application Number: PCT/DK02/00419
- 20 June 2002 (20.06.2002) (22) International Filing Date:
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:

PA 2001 00962 20 June 2001 (20.06.2001) DK PA 2002 00415 15 March 2002 (15.03.2002) DK

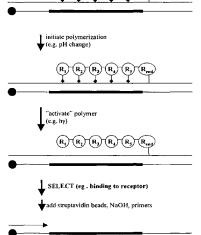
(71) Applicant (for all designated States except US): NUEVO-LUTION A/S [DK/DK]; Rønnegade 8, 5th floor, DK-2100 Copenhagen Ø (DK).

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[Continued on next page]

(54) Title: TEMPLATED MOLECULES AND METHODS FOR USING SUCH MOLECULES

Chemical Display - Principle. andom nucleotide sequence



(regular PCR reaction)

Clone and sequence

repeat polymer-formation and selection

(57) Abstract: The present invention relates to a method for synthesising templated molecules. In one aspect of the invention, the templated molecules are linked to the template which templated the synthesis thereof. The intion allows the generation of libraries which can be screened for e.g. therapeutic activity.

WO 02/103008 A3



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(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- (88) Date of publication of the international search report: 27 November 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.